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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/378,398
Filing Date: August 20, 1999
Appellant(s): TEO, PATRICK

Michael K. Hsu
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed May 28, 2004.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement that "Applicant has not submitted any amendment subsequent to the final rejection" is in error. An amendment after final rejection filed on January 23, 2004 has been entered.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 1-30 and 35-37 stand or fall together, claims 31-32 stand or fall together, and claims 33-34 stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

6,304,284	DUNTON et al	10-2001
6,144,804	INOUE	11-2000
6,256,058	KANG et al	7-2001
6,269,144	DUBE et al	7-2001
6,268,936	TRUC et al	7-2001
2002/0175924 A1	YUI et al	11-2002

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1-8, 12, 14-16, 18, 20, 23, 24, 27, 29-31, and 35-37 are rejected under 35 U.S.C. 102(e) as being anticipated by Dunton et al (6,304,284).

Dunton et al discloses a method of and apparatus for creating panoramic or surround images using a motion sensor equipped camera as shown in Figures 1A, 1B, 2, 4, and 5, and the same camera as claimed in claims 1-8, 12, 14-16, 18, 20, 23, 24, 27, 29-31, and 35-37, comprising the same camera lens (see column 1, lines 15-26, column 2, lines 15-27, column 7, lines 62-65); acquisition circuitry receiving images via the camera lens, for acquiring a first field of view when the camera lens is in a first orientation (i.e., 112 of Figure 1A, and see column 2, line 50 to column 3, line 4) and for acquiring a second field of view when the camera lens is in a second orientation (i.e., 116 of Figure 1A, and see column 2, line 50 to column 3, line 4); a viewfinder (see column 8, lines 10-23) displaying the second field of view when the camera lens is in the second orientation and displaying at least a portion of the first field of view at least partially composited with the second field of view, the second field of view at least partially overlaps the first field of view (see column 8, lines 24-42); wherein a size of the at least a portion of the first field of view is prescribed relative to a size of the first field of view, the size of the at least a portion of the first field of view is prescribed relative to a size of the second field of view, the size of the at least a portion of the first field of view is its width, and the size of the second field of view is its width, the size of the at least a portion of the first field of view is its height, and the size of the second field of view is its height, the size of the at least a portion of the first field of view is the field of view angle it subtends, and the size of the second field of view is the field of view angle it subtends (see Figures 1A and 3B, see column 5, lines 49-65, column 6, lines 20-50, column 7, line 52 to column 8, line 6); wherein the focus of the camera lens is not

changed during acquisition of the first and second and at least one additional fields of view (see column 3, lines 32-47, column 7, line 52 to column 8, line 6); combining circuitry for combining the first and second fields of view, wherein the first and second fields of view are portions of a scene and wherein the combining circuitry combines the first and second fields of view into a panoramic image of the scene, the panoramic image has a cylindrical geometry, the panoramic image has a spherical geometry (see Figure 1, see column 4, line 49 to column 5, line 6, column 5, line 49 to column 6, line 50); view control circuitry for selecting a portion of the panoramic image to display, and wherein the viewfinder displays the selected portion of the panoramic image (see column 5, lines 49-65, column 6, lines 20-50, column 8, lines 10-42); wherein the acquisition circuitry acquires at least one additional field of view (i.e., 3rd position of Figure 1, and see column 2, lines 50-67, column 6, lines 20-50) with the camera lens being in at least one additional orientation, and wherein the viewfinder displays an additional field of view of the camera lens when the camera lens is in each additional orientation and displays at least a portion of at least one previously acquired field of view at least partially composited with the additional field of view, wherein each additional field of view at least partially overlaps the at least one previously acquired field of view (see column 6, lines 20-50, column 8, lines 10-42); the combining circuitry combining the first and second and the at least one additional fields of view, wherein the first and second and the at least one additional fields of view are portions of a scene and wherein the combining circuitry combines the first and second and the at least one additional fields of view into a panoramic image of the scene (see Figure 1, see column 4, line 49 to column 5, line 6, column 5, line 49 to column 6, line 50); perspective conversion circuitry for converting a perspective of the at least a portion of the first field of view from the first orientation to the

second orientation (see Figure 1, column 2, lines 50-67, column 6, lines 20-50); and an indicator indicating when the camera lens is in the second orientation, the indicator being a light and a beeper (see 516 of Figure 5, column 8, lines 10-62).

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 9-11, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunton et al.

Dunton et al discloses substantially the same camera as above, but does not particularly disclose the followings:

(a) wherein the size of the at least a portion of the first field of view is prescribed to an amount between 20% and 40% of the size of the second field of view, wherein the at least a portion of the first field of view is composited with the second field of view by an opacity of approximately 50%, and wherein the at least a portion of the first field of view is composited with the second field of view by an opacity of approximately 100% as claimed in claims 9-11; and

(b) wherein the at least a portion of the at least one previously acquired field of view is composited with the additional field of view by an opacity of approximately 50% and wherein the at least a portion of the at least one previously acquired field of view is composited with the additional field of view by an opacity of approximately 100% as claimed in claims 24 and 25.

Regarding (a) and (b), it is noted that Dunton et al does teach the particular combining of assembling sections 350 in to a pie 352 as shown in Figure 3B, thereby generating composite images for panoramic display and the particular use of mirror tilt actuator 316 being changed to an adjacent preset tilt position so that the camera system records a different cylindrical format surround with each revolution of camera system 300, wherein the preset tilt positions take into account the field of view of the camera system in the direction of the tilt and the overlap region desired between the top edge and the bottom edge of the adjacent cylindrical format surround images in the arc (see column 4, line 49 to column 6, line 19). As such, it is considered obvious that the tilt actuator 316 of Dunton et al may be adjusted to provide any desired cylindrical format, including the 20% to 40% of the size of the second field of view, and the tilt actuator may be adjusted to provide an desired overlap region, including the 50% or 100% opacity when compositing the first field of view with the second field of view or when compositing the previously acquired field of view with the additional field of view as claimed. Therefore, it would have been obvious to one of ordinary skill in the art, having the Dunton et al reference in front of him/her and the general knowledge of the image formatting and compositing of images for panoramic display, would have had no difficulty in providing the adjustments of the tilt actuator 316 of Dunton et al necessary for providing the size of the at least a portion of the first field of view prescribed to an amount between 20% and 40% of the size of the second field of view, the compositing of the first field of view with the second field of view by an opacity of 50% or 100%, and the compositing of the previously acquired field of view with the additional field of view by an opacity of 50% or 100%, in view of Dunton et al teachings that the mirror tilt actuator may be changed to a desired and adjacent preset tilt position for the same well known

different image formatting and desired overlapping region of images for panoramic displaying purposes as claimed.

5. Claims 13 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunton et al as applied to claims 1-8, 12, 14-16, 18, 20, 23, 24, 27, 29-31, and 35-37 in the above paragraph (2), and further in view of Inoue (6,144,804).

Dunton et al discloses substantially the same camera as above, but does not particularly disclose a lens focus lock for locking the focus of the camera lens during acquisition of the first and second and the at least one additional fields of view as claimed in claims 13 and 28. However, Inoue discloses a camera with visual line detection capability and teaches the conventional use of a camera with focus lock features (see column 4, lines 39-45). Therefore, it would have been obvious to one of ordinary skill in the art, having the Dunton et al and Inoue references in front of him/her and the general knowledge of camera focussing features, would have had no difficulty in providing the lens focus lock feature as taught by Inoue for the camera of Dunton et al for the same well known fixed focussing of images purposes as claimed.

6. Claims 17 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunton et al as applied to claims 1-8, 12, 14-16, 18, 20, 23, 24, 27, 29-31, and 35-37 in the above paragraph (2), and further in view of Kang et al (6,256,058).

Dunton et al discloses substantially the same camera as above, further including wherein the panoramic image has a cylindrical geometry (see column 5, lines 49-67).

Dunton et al does not particularly disclose, though, rectilinear to cylindrical conversion circuitry for converting the first and second fields of view from rectilinear coordinates to cylindrical coordinates and cylindrical to rectilinear conversion circuitry for converting the

selected portion of the panoramic image from cylindrical coordinates to rectilinear coordinates as claimed in claim 17 and 21. The particular conversion of rectilinear coordinates to cylindrical coordinates and vice versa for images, in general, is old and well recognized in the art, as exemplified by Kang et al (see column 3, line 65 to column 4, line 7, column 4, lines 25-30, column 5, lines 6-60). Therefore, it would have been obvious to one of ordinary skill in the art, having the Dunton et al and Kang et al references in front of him/her and the general knowledge of rectilinear and cylindrical coordinate systems and the associated conversions between the coordinate systems, would have had no difficulty in providing the rectilinear to cylindrical conversion circuitry and cylindrical to rectilinear conversion circuitry as taught by Kang et al for the panoramic images of Dunton et al for the same well known cylindrical and rectilinear coordinate compliance purposes as claimed.

7. Claims 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunton et al as applied to claims 1-8, 12, 14-16, 18, 20, 23, 24, 27, 29-31, and 35-37 in the above paragraph (2), and further in view of Dube et al (6,269,144).

Dunton et al discloses substantially the same camera as above, further including wherein the panoramic image has a spherical geometry (see column 6, lines 5-19).

Dunton et al does not particularly disclose, though, rectilinear to spherical conversion circuitry for converting the first and second fields of view from rectilinear coordinates to spherical coordinates and spherical to rectilinear conversion circuitry for converting the selected portion of the panoramic image from spherical coordinates to rectilinear coordinates as claimed in claim 19 and 22. The particular conversion of rectilinear coordinates to spherical coordinates, in general, is old and well recognized in the art, as exemplified by Dube et al (see column 3, lines

33-46, column 24, lines 1-12). And in view of such rectilinear to spherical conversion of Dube et al, it is consider obvious to provide the complementary spherical to rectilinear conversion of images as claimed. Therefore, it would have been obvious to one of ordinary skill in the art, having the Dunton et al and Dube et al references in front of him/her and the general knowledge of rectilinear and spherical coordinate systems and the associated conversions between the coordinate systems, would have had no difficulty in providing the rectilinear to spherical conversion circuitry and spherical to rectilinear conversion circuitry as taught by Dube et al for the panoramic images of Dunton et al for the same well known spherical and rectilinear coordinate compliance purposes as claimed.

8. Claims 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunton et al as applied to claims 1-8, 12, 14-16, 18, 20, 23, 24, 27, 29-31, and 35-37 in the above paragraph (2), and further in view of Truc et al (6,268,936).

Dunton et al discloses substantially the same camera as above, but does not particularly disclose perspective conversion circuitry including line processing circuitry for determining modified color values at pixel locations within vertical lines of the converted at least a portion of the first field of view, wherein the line processing circuitry determines modified color values at pixel locations within vertical lines of the converted at least a portion of the first field of view based on unmodified color values at a corresponding vertical line of the at least a portion of the first field of view as claimed in claims 32 and 33. However, Truc et al discloses a film scanner as shown in Figure 8 and teaches the conventional modification of colors associated with panoramic and photographic images (see column 5, lines 25-36, column 7, lines 26-40). Therefore, it would have been obvious to one of ordinary skill in the art, having the Dunton et al

and Truc et al references in front of him/her and the general knowledge of color modification of images, would have had no difficulty in providing the color modification of images as taught by Truc et al for the panoramic images of Dunton et a for the same well known color enhancement purposes as claimed.

9. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Dunton et al and Truc et al as applied to claims 1-8, 12, 14-16, 18, 20, 23, 24, 27, 29-33, and 35-37 in the above paragraphs (2) and (8), and further in view of Yui et al (US 2002/0175924 A1).

The combination of Dunton et al and Truc et al discloses substantially the same camera as above, but does not particularly disclose wherein the line processing circuitry re-scales vertical lines of the at least a portion of the first field of view as claimed in claim 34. However, Yui et al discloses an image display system as shown in Figure 1, and teaches the particular re-scaling of vertical lines of images (see page 2, section [0026]). Therefore, it would have been obvious to one of ordinary skill in the art, having the Dunton et al, Truc et al, and Yui et al references in front of him/her and the general knowledge of image re-scalings, would have had no difficulty in providing the vertical line image re-scaling as taught by Yui et al for the panoramic images of Dunton et al for the same well known re-scaling of original image data purposes as claimed.

(11) Response to Argument

Regarding the appellant's arguments at pages 5-6 of the Brief filed May 28, 2004 concerning that "... Dunton et al does not define the viewfinder displaying the second field of view and at least a portion of the first field of view. Instead of displaying a portion of the first

image along with the second sequential image in the viewfinder, Dunton et al rely on arrows or voice signals to signal the user to move the camera in a particular direction. In fact, Dunton et al mention the term "viewfinder" only once throughout the entire specification, and that portion of the specification only teaches "arrows displayed in the camera viewfinder" (column 8, line 13). Since the portion of the reference relied upon by the Examiner merely discloses arrows displayed in the viewfinder, Dunton et al cannot reasonably be considered to disclose the viewfinder displaying the second field of view and at least a portion of the first field of view at least partially composited with the second field of view, as defined in independent claim 1 ...", the Examiner respectfully disagrees. It is submitted that the term "viewfinder" is well recognized in the field of camera systems, and one skilled in the art would understand that the viewfinder includes a lens for viewing and capturing intended images from the camera system. The American Heritage Dictionary defines the term "viewfinder" as a device on a camera that indicates, either optically or electronically, what will appear in the field of view of the lens (see attachment). Therefore, though Dunton et al may teach various additional features as part of the viewfinder system including the particular use of visual (arrow), voice, or audio prompting a user to move the camera in a particular direction, the viewfinder of Dunton et al nevertheless provides a visual display of the images intended to be captured by a camera. The appellant's attention is directed to column 8, lines 11-62 of Dunton et al for the particular teachings that a proper amount of overlap between sequential images is being displayed on the LCD of the viewfinder. And by moving the camera with the aid of visual, audio, and voice prompts, each one of the sequential images picked up and displayed includes an overlapping region, and thus provides the display of the second field of view when the camera lens is =in the second orientation and

displaying at least a portion of the first field of view at least partially composited with the second field of view, as claimed.

Regarding the appellant's arguments at pages 6-7 of the Brief filed May 28, 2004 concerning claims 9-11, 25, and 26, and in general that Dunton et al cannot reasonably be considered to disclose or suggest the viewfinder displaying a second field of view and at least a portion of a first field of view at least partially composited with the second field of view, the Examiner wants to point out that such arguments have been addressed in the above.

Regarding the appellant's arguments at pages 7-9 of the Brief filed May 28, 2004 concerning claim 31, that Dunton et al does not teach the perspective conversion circuitry, and in specifically that "Dunton et al merely disclose the movement of a camera and the use of sensors to detect lateral acceleration ... to detect rotation 118 and ... to detect tilt. Camera movement and camera motion detection are simply irrelevant to the subject of converting a perspective, and column 2, lines 50-67 does not disclose anywhere converting a perspective of a portion of a first field of view from the first orientation to the second orientation, as defined in claim 31 ... In one example, Dunton et al teach a method for determining corresponding positions by having a user select "a point in the first image .. and selects or clicks on the corresponding point in the second image" ... The determination of corresponding points does not involve the conversion of a perspective ... ", the Examiner respectfully disagrees. It is submitted that Dunton et al (see column 2, lines 50-67, column 6, lines 20-50), by moving a camera 104 to generate a composite image of a subject 108 thereby taking overlapping images from one position (112 of Figure 1) to another (116, 118 of Figure 1) provides the same perspective conversion circuitry for converting a perspective of the at least a portion of the first field of view from the first orientation to the

second orientation as claimed. Essentially, the first field of view of Dunton et al is taken when camera 104 is in the first position 112, thereby providing the first orientation. And when the second field of view is taken within Dunton et al, the second field of view actually includes a portion of the first field of view that is converted to a second orientation. For the above reasons, it is submitted that the claimed invention is anticipated by Dunton et al.

Regarding the appellant's arguments at pages 9-11 of the Brief filed May 28, 2004 concerning claims 33 and 34, and in general that "... Truc et al ... do not teach perspective conversion by determining modified color values at pixel locations within vertical lines of the converted portion of the first field of view based on unmodified color values at a corresponding vertical line of the portion of the first field of view, as defined in claim 33. First, claim 33 defines a circuitry for perspective conversion – not for the purpose of "color modification" as characterized by the Examiner. Second, column 7, lines 26-40 discloses a menu bar displayed on a screen that "includes five pull-down menus ... Truc et al teach finding boundaries between individual images by calculating the average intensity of each column of pixels ... The finding of boundaries simply involves the calculation of the average intensity of each individual column of pixels, and does not depend on unmodified color values at a corresponding column ...", the Examiner wants to point out that the critical issue at hand is that Truc et al nevertheless teaches the conventional use of color modifications that is associated with panoramic images (see column 5, lines 25-36, column 7, lines 26-40 of Truc et al). And using such color modifications as taught by Truc, it is hence considered obvious to provide the particular perspective conversion circuitry including line processing circuitry for determining modified color values at pixel locations within vertical lines of the converted at least a portion of the first field of view, wherein

the line processing circuitry determines modified color values at pixel locations within vertical lines of the converted at least a portion of the first field of view based on unmodified color values at a corresponding vertical line of the at least a portion of the first field of view within the panoramic image system of Dunton et al, thereby rendering obvious the claimed invention.

Regarding the appellant's arguments at pages 11-12 of the Brief filed May 28, 2004 concerning that "... the teachings of Truc et al relate to a film scanner for scanning a film strip. Cameras taking panoramic pictures and film scanners for scanning film strips involve entirely different technologies and applications. As the teaching of Dunton et al have nothing to do with the problems associated with film scanners addressed by Truc et al, Applicant submits that there would not have been motivation for one having ordinary skill in the art to combine Dunton et al and Truc et al in the manner proposed by the Examiner ... the Examiner has improperly characterized the teachings of Dunton et al and Truc et al ...", the Examiner respectfully disagrees. Though Truc et al may teach in general a film scanner system, Truc et al is also concerned with boundaries of panoramic images (see column 5, lines 25-36), and the manipulation of images such as the modification of color, brightness, contrast, and orientation of images (see column 7, lines 26-40). And, such modification of colors in panoramic images as taught by Truc et al may certainly be provided as part of the panoramic image compositing system of Dunton et al, thereby arriving at the claimed invention.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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view·find·er

view·find·er (vy□ □fŋ□d□r) *noun*
A device on a camera that indicates, either optically or electronically, what will appear in the field of view of the lens.